

Response to Office Action mailed September 18, 2008
Serial No. 10/526,265; filed March 2, 2005
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Amendments to the Drawings:

Attachment: One replacement drawing sheet labeled Replacement Sheet 1 / 2 is
attached to the end of this document.

REMARKS

Claims 1-5, 7, and 8 have been amended. Claims 11 and 12 have been added. No claims have been cancelled, whereby claims 1-12 are pending and presented for review. Favorable reconsideration and allowance are requested in light of the remarks which follow.

1. Objection to the Drawings

The Examiner objects to the drawings for, e.g., not showing multiple imbalance shafts that are coaxial with each other. Applicant amended FIG. 1, as shown in REPLACEMENT SHEET 1 / 2, to show such configuration with a portion of a coaxially arranged second imbalance shaft shown using phantom lines. Such amendment to the drawings finds support in, e.g., the claims and elsewhere in the application as filed, whereby no new matter has been presented.

2. Objection to the Claims

The Examiner objects to claim 2 as not further limiting the scope of its base claim 1. Claim 2 has been amended to clarify its scope, resolving the issue.

3. Objection to the Specification

The Examiner objects to typographical errors in the last paragraph of page 1 of the application as filed. Applicant corrected the typographical error, resolving the issue.

4. Rejections Under 35 U.S.C. § 112

The Examiner rejects claims 1-10 under 35 U.S.C. § 112, second paragraph, as being indefinite, based on various antecedent basis issues. Applicant herein amends claims 1, 2, 4, and 7 to address the specific issues raised in the Office Action. Similar issues have been corrected in claims 3, 5, and 8. In addition, new claims 11 and 12 have been added that are commensurate in scope with claims 1 and 9, respectively but that are presented in even better conformance with preferred U.S. practice.

5. Prior Art Rejections

The Examiner rejects claims 1-10 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,177,386 to Shimada (herein “the Shimada patent”). Claims 1-9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by DE-100 38 206 to Fervers et al. (corresponding to U.S. Patent No. 7,171,866 and herein “the Fervers patent”). Applicant respectfully asserts that the amendments herein obviate all such rejections because, as is discussed below, both of the Shimada and Fervers patents teach strongly away from the novel and non-obvious independent claim 1, as amended. Therefore, reconsideration is in order and is respectfully requested.

a. Recapitulation of the Invention*

The invention relates to soil compacting devices, and particularly to a vibration exciter for a vibration plate-type soil compacting device. Within the vibration exciter, a magnitude of the total centrifugal force resulting from rotating unbalanced masses is adjusted to be proportional to a travel speed of the soil compacting device, so that the centrifugal forces produced by the unbalanced masses during rotation of the unbalanced shafts are canceled out. Prior art vibration plate-type soil compacting devices use unbalanced shafts to generate vibrations using centrifugal forces of the unbalanced shafts. Each of the unbalanced shafts has a stationary imbalance mass and a movable balance mass. Direction change of such prior art compacting devices is effectuated by moving the movable balance masses to produce an overall centrifugal force that is directed either forward or backward, causing forward or backward movement, respectively. To bring the soil compacting device to a standstill, the movable balance masses are set to create a resultant force in the vertical direction. Correspondingly, the compacting device directs a strong compacting force (a maximum compacting force) to the soil, while the compacting remains at a standstill, which is not always desirable and which can lead to over compacting the soil at that location.

* This Section 5(a) is presented for background purposes so the Examiner may understand the state of the art and, in general terms, the Applicant's contribution thereto. It is not intended to particularly address the obviation of any particular rejection. That task instead is performed in Section 5(b) below.

In the present invention, the positions of the movable imbalance masses in relation to the imbalance shafts that support them are adjusted such that the centrifugal forces produced by the imbalance masses during the rotation of the imbalance shafts cancel each other out as a whole in each rotational position of the imbalance shafts. Thus, while each imbalance mass in itself produces a centrifugal force, the relative positions of the movable imbalance masses are adjusted so that the centrifugal forces generated by rotation of the imbalance masses compensate one another in the overall sum. As a this configuration, **while operating at a standstill position, it is possible that the the vibration exciter produces no vibrations aggregate, although the imbalance shafts are rotating.** Stated another way, the movable balance masses are **individually adjustable** upon their respective supporting imbalance shafts, allowing an establishment of an **overall centrifugal force resulting from the imbalance masses that is proportional to a speed of forward or backward motion of the soil compacting device.**

b. Obviation of Rejections

Applicant respectfully points out that the amendment to claim 1 obviates the rejections since the Shimada and Fervers patents do not and cannot disclose each and every element of the novel and non-obvious independent claim 1, and moreover because both of the Shimada and Fervers patents teach strongly away from the novel and non-obvious independent claim 1.

Independent claim 1, as amended, recites a vibration exciter for soil compacting devices with imbalance shafts that stand parallel or coaxial to one another. The imbalance shafts can be driven in opposite directions with the same rotational speed and each of the imbalance shafts holds (i) an imbalance mass attached thereto in stationary fashion, and (ii) an imbalance mass that can be moved in a rotational fashion relative to the shaft. Furthermore, each of the

imbalance shafts has an adjustment means for individually adjusting the position of the respective movable imbalance mass relative to the imbalance shaft that bears it. During operation, the adjustment means can adjust relative positions of the movable imbalance masses in such a way that the centrifugal forces produced by the imbalance masses during the rotation of the imbalance shafts cancel each other out as a whole, in each rotational position of the imbalance shafts. A change of the relative positions can be executed in such a way that the magnitude of an overall centrifugal force resulting from the imbalance masses is proportional to a speed of forward or backward motion of the soil compacting device.

Neither the Shimada patent nor the Fervers patent discloses or can disclose imbalance masses that are individually adjustable upon their respective imbalance shafts bearing them, such that changes of relative positions thereof establish *a magnitude of an overall centrifugal force resulting from the imbalance masses which is proportional to a speed of forward or backward motion of the soil compacting device*.

Generally referring to the cited prior art, the Shimada patent discloses a vibration generator that is incorporated into a vibrating pile driver, *i.e., not a ground traversing soil compacting device*. The vibration generator includes a pair of imbalance shafts (FIG. 1), each having a pair of fixed imbalance weights 52A(a, b), 51A(a, b), and an adjustable imbalance weight 51B, 52B. The imbalance weights 51B and 52B can be positioned in direct opposition to the fixed imbalance weights 52A(a, b), 51A(a, b), completely eliminating system vibration(s) (see FIGS. 4A and 5A).

The Fervers patent is discussed in the Background Section of the present application and discloses a vibration exciter which allows a user to adjust *a resultant overall force vector to a direction of vibra-motive travel, or vertically upward for standstill operation*.

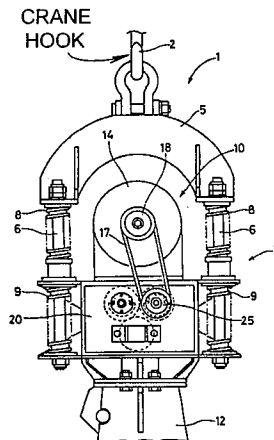
Referring specifically now to the rejections, Applicant here again asserts that each of the Shimada and Fervers patents teaches strongly away from providing a vibration exciter for a soil

compacting device with individually adjustable imbalance masses that can be adjusted to establish *a magnitude of an overall centrifugal force resulting from the imbalance masses which is proportional to a speed of forward or backward motion of the soil compacting device*. For example, referring specifically to the Shimada patent, it discloses that the vibration device should be incorporated into a pile driver.

Shimada discloses that:

--vibrating pile driver 1 comprises a hanger 5 provided with a sling portion where a hook 2, which is a hanging means adopted by a crane or the like, is hooked (Col. 5, Lines 1-3)--

In other words, the Shimada patent discloses that the vibration device **MUST NOT TRAVEL** in a forward or backward (or even transverse) motion. Instead, the entire pile driver device is maintained in an upright stable position by a “*crane or the like*” (Col. 5, Lines 3), see annotated FIG. 3 below.



the Shimada patent
FIG. 3 annotated

The Fervers patent discloses a vibration exciter for a soil compacting device that has movable imbalance masses that are not individually adjustable, but rather they are **adjustable in unison with each other**, whereby **they move in the same direction** and in concert with each other. In this configuration, the compacting device **requires directing the centrifugal forces upwardly**, without forward or rearward facing force components, so that the sum or resultant centrifugal force is directed straight up. In other words, the Fervers patent discloses that the compacting device **MUST PRODUCE VIBRATIONS WHILE AT A STANDSTILL**, but maintains the device in the standstill position by directing the resultant vibration forces directly upwardly. See FIGS. 2 and 4 below, noting that the total force arrows always face the same direction and are parallel to each other, and, at standstill or "0 PHASE", the force arrows point directly upwardly.

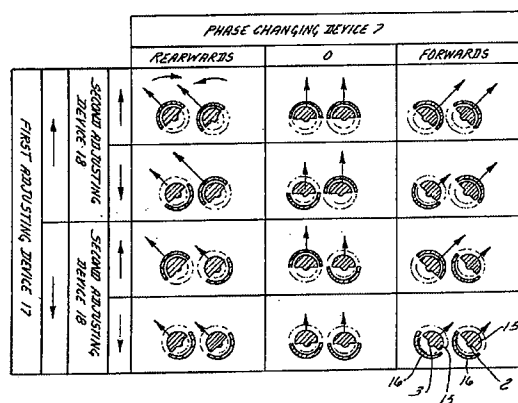
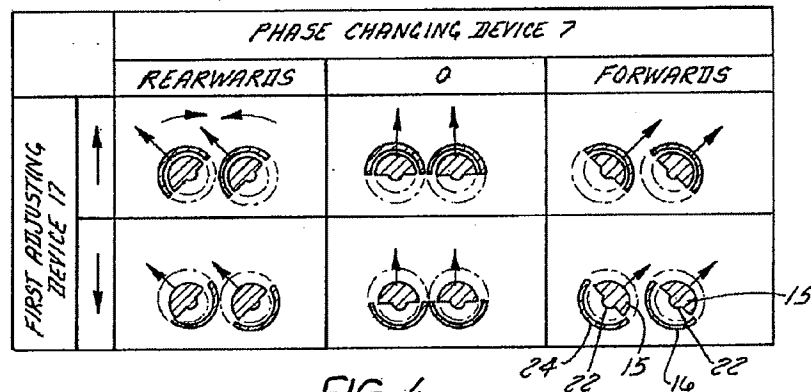


FIG. 2



FIGS. 2 and 4 of the Fervers patent

Accordingly, since (i) the Shimada patent discloses the desirability of restricting a vibration exciter so that **it cannot move forwardly or rearwardly at all**, and (ii) the Fervers patent discloses the desirability of **directing centrifugal forces upwardly** in order to maintain the soil compacter at a standstill, it is therefore believed independent claim 1 is allowable over the cited prior art.

Thus, neither the Shimada patent nor Fervers patent can disclose each and every limitation of claims 2-10 whereby these claims are allowable as depending from allowable claim 1, directly or indirectly, as well as on their own merits.

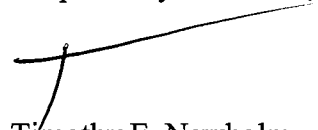
For instance, claim 10 further recites that at least one part of the imbalance masses is formed from a plurality of imbalance elements.

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Conclusion

Applicant asserts that claims 1-12 are in compliance with 35 U.S.C. §§ 102, 103, and 112, and each defines patentable subject matter. A Notice of Allowance is therefore respectfully requested. No fee is believed due with this communication. Nevertheless, should the Examiner consider any fees to be payable in conjunction with this or any future communication, the Director is authorized to direct payment of such fees, or credit any overpayment, to Deposit Account No. 50-1170.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Timothy E. Newholm", is written over a horizontal line.

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